ARIZONA WATER COMPANY

Docket No. W-1445A-02-0619

2002 RATE HEARING EXHIBIT NO. ___

For Test Year Ending 12/31/01

PREPARED

REJOINDER TESTIMONY & EXHIBITS

OF

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BEFORE THE ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF ARIZONA WATER COMPANY, AN ARIZONA CORPORATION, FOR ADJUSTMENTS TO ITS RATES AND CHARGES FOR UTILITY SERVICE FURNISHED BY ITS EASTERN GROUP AND FOR CERTAIN RELATED APPROVALS.	**Docket No. W-01445A-02-0619**

REJOINDER TESTIMONY OF THOMAS M. ZEPP

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I. INTRODUCTION, SUMMARY AND CONCLUSIONS

Q. PLEASE STATE YOUR NAME.

A. Thomas M. Zepp.

Q. DID YOU PREPARE DIRECT TESTIMONY ON BEHALF OF ARIZONA WATER IN THIS CASE?

A. Yes.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. Arizona Water Company ("Arizona Water" or "the Company") asked me to review and to respond where I thought it to be appropriate to the September 3, 2003 surrebuttal testimonies of Mr. Joel M. Reiker and Mr. William A. Rigsby.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. In this section of my testimony, I summarize my conclusions. In Section II, I respond to Mr. Rigsby. In Section III, I respond to Mr. Reiker.

Q. DO YOU SPONSOR ANY TABLES AND EXHIBITS TO ACCOMPANY THIS REJOINDER TESTIMONY?

A. Yes. I present four Rejoinder Tables identified as TMZ-RJ1, TMZ-RJ2, TMZ-RJ3, TMZ-RJ5 and one document identified as TMZ-RJ4.

A. OVERVIEW OF KEY POINTS.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The two primary issues in this proceeding are the cost of equity of publicly-traded water utilities and the magnitude of the equity risk premium above that benchmark equity cost estimate that is required to provide Arizona Water a fair rate of return on equity. I provide

rejoinder testimony to the rebuttal testimony submitted by Mr. Rigsby and Mr. Reiker on these two issues.

1. Costs of equity are higher today than when Staff and RUCO prepared direct testimony.

Costs of equity are higher today than when Mr. Rigsby and Mr. Reiker prepared their equity cost estimates, but they have not increased their recommended ROEs. Since the time Mr. Rigsby and Mr. Reiker filed their direct testimonies, the average of 5-year, 7-year and 10-year Treasury rates relied upon by Mr. Reiker to prepare his equity cost estimates has increased by 70 basis points. A consensus of Blue Chip forecasts of the intermediate-term Treasury rates that will be prevailing when the ACC authorizes new tariffs for the Company are another 55 basis points higher than current rates. I updated my initial equity cost estimates in my August rebuttal testimony. In their surrebuttal testimonies, neither Mr. Reiker nor Mr. Rigsby updated his recommended equity cost to reflect this substantial increase in the basic cost of credit. Also, they ignored forecasts that show interest rates are expected to be even higher when new tariffs are put in place. Obviously, the cost of equity for a typical water utility is higher now than when they prepared their estimates.

2. Authorized, Realized and Forecasted ROEs provide useful indications of the benchmark cost of equity for water utilities.

Mr. Rigsby and Mr. Reiker deny the usefulness of my Rebuttal Tables 1 and 2 in which I show authorized ROEs, earned ROEs and *Value Line* projections of ROEs. Mr. Meek provides similar data in his testimony. I respond to Mr. Rigsby and point out that

once *Value Line* forecasts are re-stated on a mid-period basis, the average of forecasted ROEs for his sample is 11.1% for 2004 and 12.2% for the longer-period forecasted by *Value Line.* Those forecasts of ROEs are more relevant to determine the benchmark cost of equity than the 9.0% to 9.5% he says should be considered. I also respond to Mr. Reiker regarding the relevance of Rebuttal Tables 1 and 2. The U. S. Supreme Court has established three tests of a reasonable rate of return. One of those is that the return to the equity owner should be commensurate with returns for comparable risk companies. Contrary to his claims, Rebuttal Tables 1 and 2 provide evidence about such comparable returns. Mr. Reiker claims such returns do not reflect the cost of equity because market-to-book ratios for the sample water utilities are above 1. He is wrong. Mr. Thornton of the ACC staff and I have both provided long lists of reasons market-to-book ratios might be above 1.0 when a water utility is earning no more than its cost of equity.

3. My restatements of Staff and RUCO DCF analyses are reasonable and more appropriate than their original estimates.

Mr. Rigsby and Mr. Reiker also disagree with my restatements of their DCF analyses. I have already addressed Mr. Rigsby's comments and Mr. Reiker's response to my restatement of his constant growth DCF model in my rebuttal testimony and do not repeat those comments again in this rejoinder testimony. I do, however, respond to Mr. Reiker's contention that it is inappropriate to include the second stage of growth that I inserted in his multi-stage DCF model. Dr. Myron Gordon, the father of the DCF model, reviewed my DCF approach in another proceeding where the growth issues were

analogous to this one. I provide an exhibit filed in that case in which Dr. Gordon concludes the restatement of Mr. Reiker's model is appropriate.

4. Forecasted interest rates provide more relevant equity cost estimates than do current interest rates.

I have already addressed reasons forecasted interest rates and the zero-beta version of the CAPM are appropriate in my rebuttal testimony. I do not re-address the reasons forecasts of interest rates should be adopted. I do, however, respond to Mr. Reiker's contention that the use of adjusted betas eliminates the bias in equity cost estimates for low beta stocks indicated by the zero-beta version of the CAPM. I point out that Fischer Black, one of the pioneers who tested the CAPM, knew about the appropriateness of adjusting betas, but still found the bias in low beta stocks in his 1993 study. Black also offers a number of reasons to expect the zero-beta model is more appropriate than the original CAPM.

5. Smaller water utilities are more risky than large ones.

Mr. Rigsby and Mr. Reiker's continue to deny that smaller water utilities, such as Arizona Water, require a risk premium above the benchmark cost of equity. The keystone supporting their denial of the needed risk premium for Arizona Water is the Wong article that I rebutted with publication of my article in *The Quarterly Review of Economics and Finance* and which I discussed in my rebuttal testimony. Mr. Rigsby reserves judgment about the article but is unwilling to recommend a risk premium for Arizona Water. It is

inappropriate to delay giving Arizona Water the risk premium it requires until others have attempted to rebut my article.

6. Mr. Reiker's elaborate, technical arguments are trivial and do not salvage the Wong paper.

Mr. Reiker, however, offers a number of technical arguments in an attempt to rebut my article. Below, I respond to each of his technical arguments and show they have no merit. In an attempt to challenge my article, he criticizes my beta estimates for the small water utilities based on four technical, but trivial, reasons. I explain why his reasons are trivial and compare his alternative beta estimates to mine in Rejoinder Table 3. His beta estimates are about the same, or slightly higher, than mine. His criticisms are nothing but an attempt to confuse the record and get the ACC to question the quality of my analysis. There is nothing of substance in his criticism of my analysis.

As part of my rejoinder testimony, I revisited the Wong paper and found that even the Wong paper supports a conclusion that smaller utilities have higher equity costs than larger ones. Wong presents beta estimates for two periods in her Table 2. When monthly returns are used to estimate betas, her Table 2 shows that in one of the two reported periods, betas (equity costs) increase as size decreases. Her Table 2 does not show the same relationship between beta and size for the other period. But, her Table 3 shows that, during that period, equity costs increase as size decreases because there is a significant (at the 10% level) size effect. Thus, my article and a more complete analysis of the Wong data show that small utilities require higher equity costs than larger utilities. The linchpin

in Mr. Reiker's and Mr. Rigsby's support for denying Arizona Water its required risk premium is gone.

7. Baa rates provide more meaningful risk premium estimates of equity costs than 10-year Treasury rates.

I also respond to Mr. Reiker's contention that risk premium estimates based on a comparison of equity costs and corporate bond rates is not meaningful and that risk comparisons should be based on comparisons of equity costs to default-free government bonds. I show that for the 1982-2002 period considered in the analysis I presented in Table 23, Baa corporate bonds provided a better explanation of equity costs than did 10-year Treasury bonds. And, for the most recent period, the Baa rates provide a much better explanation. These results are not in conflict with Baa bonds having default risk, but show that the default risk must be relatively stable or the 10-year Treasury bonds would have done a better job of explaining equity costs. My analysis reinforces my conclusion that Arizona Water's recent Series K bond issue supports a risk premium for the Company of at least 37 to 49 basis points. Mr. Reiker's contention that default risk invalidates such an inference is in conflict with my regression results.

B. SPECIFIC CONCLUSIONS.

Q. WHAT ARE YOUR SPECIFIC CONCLUSIONS:

A. My specific conclusions are:

1. My Rebuttal Tables 1 and 2 provide useful indications of the cost of equity. The *Hope* and *Bluefield* U. S. Supreme Court decisions require the ACC to provide a return to Arizona Water that is commensurate with returns on investments in other enterprises having corresponding risks. Because Arizona Water is more risky, it requires a higher return.

2. The cost of Arizona Water's Series K bond issue supports a risk premium for Arizona Water of no less than 37 to 49 basis points.

3. Notwithstanding Baa corporate bonds having default risk, evidence I present shows risk premium estimates above Baa bond rates are preferred to risk premium estimates above 10-year Treasury rates at this time.

4. Mr. Reiker and Mr. Rigsby did not update their equity cost estimates. Since the time they prepared those equity cost estimates, the yields on intermediate Treasury bond rates have increased by 70 basis points. This increase in the basic cost of credit indicates the cost of equity estimates for their respective samples are too low.

5. Mr. Reiker's quotations from various publications do not invalidate my conclusion that there are other systematic risks, such as distress and size, that are priced by investors.

6. Both evidence in Wong article and my article commenting on the Wong article support a conclusion that small utilities require higher equity returns than larger utilities.

7. ACC Staff's estimates of betas corroborate my finding that beta estimates for small utilities are closer to 1.0 if annual data are used to make the estimates.

8. Evidence Wong reports in her tables does not support the conclusions she writes. A closer examination of the evidence in her tables shows her statistical results support small utilities having higher equity costs than larger ones (either through differences in beta or a small firm effect).

9. Mr. Reiker's numerous technical comments do not invalidate the substance of the findings in my article, that small utilities have higher equity costs than large utilities.

10. Contrary to Mr. Reiker's statement at page 12, my article does contradict Ms. Wong's conclusions. If anything, her tables also contradict her written conclusions.

11. In discussing my paired difference test, Mr. Reiker assumes pairs of equity costs in different years have no relationship to the financial conditions present in those years. Such an assumption makes no sense and thus my paired difference test is correct and his approach is wrong.

12. Staff's use of intermediate-term Treasury rates and *Value Line* betas does not eliminate the negative bias in equity costs for utilities with betas less than 1.0. My practical solution of using long-term Treasury bond rates in the CAPM reduces the negative bias and is preferred to both Mr. Reiker's and Mr. Rigsby's CAPM approaches.

13. Myron Gordon agreed with my multi-stage DCF model in which I assumed investors expect higher future dividend growth in subsequent periods when dividends are currently growing slower than earnings. It is appropriate to insert such a second stage growth period in Mr. Reiker's analysis to reflect such investor expectations.

14. Estimates of future ROEs expected for water utilities in Mr. Rigsby's sample is 11.1% for 2004 and 12.2% for future years, not the 9.0% to 9.5% ROEs he states in at least two places in his testimony.

15. Neither Mr. Reiker nor Mr. Rigsby provide a basis to deny the 100 to 150 basis point risk premium I estimate is appropriate for Arizona Water.

16. My updated equity costs and my restatements of Mr. Reiker's and Mr. Rigsby's equity costs that were reported in my rebuttal testimony provide the best estimates of the benchmark cost of equity and Arizona Water's cost of equity.

II. RESPONSE TO MR. RIGSBY

A. Arizona Water's series K bond issue provides powerful evidence the Company requires at least a 37 to 49 basis point risk premium.

Q. PLEASE TURN TO YOUR RESPONSE TO MR. RIGSBY. AT PAGE 27 MR. RIGSBY SAYS THAT ANY ARGUMENTS RELATED TO THE SERIES K BOND ISSUE ARE MOOT. DO YOU AGREE?

A. The series K bond issue provides powerful evidence that Arizona Water Company requires a risk premium no less than 37 to 49 basis points above the cost of equity found to be reasonable for Mr. Reiker's and Mr. Rigsby's publicly traded water utilities samples. I addressed this issue above. Mr. Rigsby ignores this important information when he argues Arizona Water requires no risk premium.

B. Uncertainties with recovery of arsenic-related costs increase risk and the required ROE for Arizona Water

Q. MR. RIGSBY ALSO DISREGARDS COMPANY TESTIMONY THAT SUBSTANTIAL UNCERTAINTIES WITH RECOVERY OF ARSENIC RELATED COSTS INCREASES THE COMPANY'S REQURIED ROE BECAUSE THE ACC IS EXPECTED TO APPROVE AN ARSENIC RECOVERY MECHANISM. DO YOU HAVE A RESPONSE?

A. Yes. His comment is it is "almost a near certainty" that some type of recovery mechanism will be approved. But it is not a certainty and the form of the ACRM is not known at this time. It is possible that the ACRM that is ultimately approved will place substantial risk on the shoulders of the Company. As a result, Arizona Water's ROE should be increased to reflect these uncertainties.

C. <u>My equity cost estimates are consistent with Mr. Meek's testimony.</u>

Q. AT PAGE 29, MR. RIGSBY STATES THAT BASED ON MR. MEEK'S TESTIMONY, YOUR TESTIMONY SHOULD BE DISREGARDED. IS YOUR TESTIMONY INCONSISTENT WITH MR. MEEK'S TESTIMONY?

A. No, it is not. I read Mr. Meek's testimony and found it dovetailed nicely with mine. Testimony built upon an appropriate application of "textbook theories" (as Mr. Rigsby characterizes my approach) should not be inconsistent with a knowledgeable investor's observations about what it takes for Arizona Water to attract capital, to have financial integrity and to earn a return comparable to other utilities of similar risk. As I noted in my rebuttal testimony, Mr. Rigsby's problem is that his approach is not an appropriate application of those "textbook theories." If it had been, his recommended ROE would not have seriously departed from the ROE Mr. Meek concludes is reasonable.

D. *Value Line* forecasts of ROEs for Mr. Rigsby's sample are 11.1% and 12.2%, not 9.0% and 9.5%.

Q. AT PAGE 31, MR. RIGSBY REPORTS FORECASTED ROES FOR HIS THREE COMPANIES. AND AT PAGE 32, HE CRITICIZES YOUR REBUTTAL TABLE 1. DO YOU HAVE ANY OBSERVATIONS ABOUT HIS COMMENTS?

A. Yes, at page 31, he reports forecasts of future ROEs for the three utilities in his sample for the year 2004. I have two observations. First, the cost of equity is a measure of what the ROE should be for many years, not just next year. *Value Line's* most recent forecast of ROEs for the longer term for the three companies in his sample are 10% for American States, 10.5% for California Water, and15% for Philadelphia Suburban, for an unadjusted average ROE of 11.8%, a full percentage point higher than the forecasted average ROE for 2004 of 10.8%. The expected ROE of 11.8% is also higher than the averages of authorized and actual ROEs I report in my Rebuttal Table 1 of 10.93% and 10.64%. Second, *Value Line* reports ROEs on an end of period basis, not a beginning of period or mid-year basis. Value Line reports an average of growth in retained earnings of 5.7% for the companies in his sample. Adjusting the average ROEs based on an end-of period basis to a mid-period basis, the indicated comparable return is 12.2% for the longer term and 11.1% for 2004. Both the corrected longer-term average and the corrected average for 2004 are substantially higher than Mr. Rigsby's recommended ROE of 9.18%.

E. The changes in risk mentioned by Mr. Rigsby are small do not offset Arizona Water's required risk premium of 100 to 150 basis points.

Q. AT PAGE 36-37, MR. RIGSBY STATES ARIZONA WATER FACES LESS RISK NOW THAN WHEN IT FILED. DID MR. RIGSBY PROPOSE A RISK PREMIUM BEFORE THESE PRESUMED CHANGES IN RISK?

A. No.

Q. DOES ARIZONA WATER STILL REQUIRE A RISK PREMIUM ABOVE THE COST OF EQUITY ESTIMATED FOR HIS SAMPLE OF WATER UTILITIES?

A. Yes, it does. Arizona Water faces more risk for a number of reasons, not the least of which is it is much smaller than utilities in his comparable sample. Also, there is clear evidence the Company requires at least a 37 to 49 basis point risk premium because it was unable to obtain debt at a cost as low as the A-rated and AA-rated water utilities in his sample and Mr. Reiker's sample. Mr. Rigsby writes the answer to this question as if the ACC had authorized a risk premium for Arizona Water in the past. Such a premium has not yet been authorized but should be authorized based on the evidence I presented in this case.

III. RESPONSES TO MR. REIKER

A. My Rebuttal Table 2 provides useful indications of equity costs.

Q. AT PAGES 1-2, MR. REIKER STATES YOUR REBUTTAL TABLE 2 DOES NOT PROVIDE USEFUL INDICATIONS OF THE COST OF EQUITY FOR HIS SAMPLE OF WATER UTILITES. DO YOU HAVE A RESPONSE?

A. Yes. Rebuttal Table 2 provides information that Mr. Reiker does not want the ACC to know about. It is information that shows the companies in his water utilities sample have

costs of equity that are higher than he has been telling the ACC will provide a fair rate of return on equity ("ROE") for Arizona Water. Rebuttal Table 2 shows that if one looks at either ROEs earned by the water utilities in his "comparable risk" sample or at ROEs that have been authorized, those utilities must have higher costs of equity than he is recommending.

Regulatory commissions take evidence on the cost of equity. They examine results of DCF models, CAPM models, and risk premium models and consider other information that experts provide at hearings. Based on all of that information, they set authorized ROEs. I explained in my direct testimony at page 38, that the FERC has adopted such state regulatory commission determinations of authorized ROEs to determine risk premium estimates of the cost of equity. Mr. Reiker is wrong when he says such useful information should be disregarded. In effect he is saying the Staff at the FERC is wrong and that regulatory commissions in other states are not authorizing (on average) ROEs that balance the interests of ratepayers and investors.

Q. HOW DOES HE DEFEND SUCH A POSITION?

A. He defends it by arguing the ROEs being earned and ROEs being authorized must exceed the cost of equity if the water utilities have market-to-book ratios of 2.2 and gas utilities have market to book ratios of 1.7. In my direct testimony, at pages 30-31, I provided a number of reasons market-to-book ratios for water utilities could be substantially above 1.0 and the utilities would be earning no more than their costs of equity. In that testimony I presented six reasons market-to-book ratios for utilities could be above 1.0 that were listed by Mr. John Thornton, another employee of the ACC Staff, in his testimony before

the Oregon PUC. I also presented three other specific reasons market-to-book ratios are expected to be above 1.0 for water utilities. That testimony stands unrebutted by Mr. Reiker. Instead of addressing the points I raised, he presents a quote by a professor who apparently is not familiar with the real world. Market-to-book ratios reported by *C.A. Turner Utility Reports* have been above 1.0 for water and gas utilities since at least 1991 (that's all of the C.A. Turner books I have).

The evidence presented in my Rebuttal Table 2 is powerful evidence that his recommendation and Mr. Rigsby's recommendation of equity costs close to 9% are not fair rates of return and are below the cost of equity.

Q. IS THERE ANOTHER REASON THE EVIDENCE IN REBUTTAL TABLE 2 IS RELEVANT TO A DETERMINATION OF THE APPROPRIATE ROE OF ARIZONA WATER?

A. Yes. In both the *Bluefield* and the *Hope* decisions, the U. S. Supreme Court found that a fair rate of return must pass three tests. Those tests are a capital attraction test, a financial integrity test and a comparable earnings test. Returns being authorized and earned by other water utilities of similar risk are such comparable returns. The returns reported in Rebuttal Table 2 provide evidence about that comparable return. While Arizona Water is more risky than the average utility in Mr. Reiker's sample, those earned and authorized ROEs provide a useful benchmark that shows a ROE that is fair for Arizona Water is no lower than those benchmark ROEs. Market-to-book ratios notwithstanding, a recommendation of just above 9% does not pass the U. S. Supreme Court tests of a fair rate of return.

B. Notwithstanding default risk, Baa corporate bonds have a stronger correlation with equity costs than do 10-year Treasury bonds at this time.

Q. AT PAGE 2, MR. REIKER SAYS CORPORATE BOND COSTS CANNOT BE MEANINGFULLY COMPARED TO EQUITY COSTS. IS HE CORRECT?

A. No. Mr. Reiker says bonds include default risk that is diversifiable and thus there can be no meaningful comparison. He contends risk comparisons should be to default-free government bonds. His statement has bearing on two important issue is this case. One is whether Arizona Water's equity cost is at least 37 to 49 basis points above the cost of equity for A-rated and AA-rated water utilities. The other is whether the risk premium estimates I presented in Table 22, 23 and 24 (in my direct testimony) and updated in Update Tables 22, 23 and 24 (in Tab A of my rebuttal testimony) are meaningful.

1. Baa rates provide better forecasts of equity costs than do 10-year Treasury rates.

Q. PLEASE BEGIN WITH THE QUESTION OF WHETHER THE USE OF CORPORATE BOND RATES OR TREASURY RATES ARE PREFERRED WHEN MAKING RISK PREMIUM ESTIMATES OF THE COST OF EQUITY. WHAT IS THE ISSUE OF CONCERN?

A. The issue is which measure of interest rates provides the most reliable estimate of the cost of equity. In cases five or six years ago, I usually conducted risk premium analyses using government bonds instead of corporate bonds. But, in the last several years, there has been a strong demand for Treasury securities that has little to do with them being the "default-free" bond of the textbooks. In part, government bonds have been demanded

because investors anticipated the government will be issuing fewer bonds and thus institutions that have requirements for certain percentages of government bonds in their portfolios have bid up the government bond prices. Also, with the drastic drop in the stock market, the slow recovery from recession and other investors concerns, there has been a "flight to quality" which has also bid up demand to unusual levels.

Rejoinder Table 1 shows the spread between Baa corporate bond rates and 10-year Treasury rates during the last two years is 50% higher than the average spread from 1982 to 1998. And, even though forecasters predict that spread will be moving back toward levels experienced in the past, the higher relative demand for Treasuries is expected to continue into the immediate future. For purposes of constructing a risk premium analysis based on historical data from 1982 to 2002, the higher yield spread today and forecasted for the future creates a problem. If the risk premium is based on an average of data for the 1982 to 1998 period, for example, that risk premium will be too small to combine with current Treasury rates. Thus, combing current or forecasted rates for Treasuries with such past realized premiums understates the cost or equity.

Q. DO YOU HAVE ANY EVIDENCE THAT Baa RATES ARE PREFERRED TO TREASURY RATES?

A. Yes. That evidence is presented in Rejoinder Table 2. I used updated data for Table 23 presented in my direct testimony as the measure of the cost of equity and ran statistical regressions to see if 10-year Treasury bond rates or Baa corporate bond rates provided the better explanation of the dependent variable (equity costs) considered in each analysis.

Q. WHAT DID YOU FIND?

A. I found that for the entire period and for the most recent period, Baa corporate bond rates provide a better explanation of equity costs than do 10-year Treasury rates. During the full 1982-2002 period, both measures of interest rates provide good explanations of equity costs, but Baa rates do a better job of explaining the level of equity costs (R^2 = 84.5%) than do 10-year Treasury rates (R^2 = 82.0%). As expected – based on the known "flight to quality," in the most recent four year period, the relative performance of 10-year Treasuries (R^2 = 8.9%) compared to Baa rates (R^2 = 18.3%) was much lower than in the full 1982-2002 period. Though both measures of interest rates still provided statistically significant explanations of the cost of equity, Baa rates are clearly preferred.

Q. WHAT DOES YOU STUDY TELLS US ABOUT A "MEANINGFULL COMPARISON" OF CORPORATE BONDS AND EQUTIY COSTS?

A. It tells us that, contrary to Mr. Reiker's contention at page 2 and 3, that comparisons of Baa bond rates and equity cost is meaningful. And, it tells us that, at least in the current period where there has been a "flight to quality", that Baa rates are preferred to Treasury rates when making risk premium estimates.

2. Notwithstanding default risk, Arizona Water's series K bond issue supports a risk premium of no less than 37 to 49 basis points.

Q. DOES YOUR STUDY ALSO CAST SOME LIGHT ON MR. REIKER'S CLAIM THAT THE PRESENCE OF DEFAULT RISK IN CORPORATE BONDS MAKES YOUR ANALYSIS AT PAGE 24 AND 25 OF YOUR DIRECT INVALID?

A. Yes. At page 24 and 25 I pointed out that Arizona Water was unable to issue its series K bonds at a rate as low as A-rated bonds. And I noted that information supported a risk

premium for Arizona Water of at least 37 to 49 basis points above the benchmark costs of equity made with Mr. Reiker's sample. At page 2 of his rebuttal, Mr. Reiker says the yield on corporate bonds cannot be meaningfully compared to the cost of equity because corporate bonds contain some default risk and such default risk is diversifiable. I do not take issue with the fact that corporate bonds contain default risk. But, based on the results in Rejoinder Table 2, default risk for utilities appears to be fairly stable. If that were not the case, Baa rates would not outperform the Treasury rates that have no default risk.

Q. PLEASE REVISE THE STATEMENT YOU MADE AT PAGE 24-25 OF YOUR REBUTTAL THAT MR. RIEKER QUOTES AT PAGE 2 TO TAKE INTO ACCOUNT HIS COMMENT ABOUT DEFAULT RISK.

A. Certainly. The modified statement is:

> If all water utilities have equity costs that are the same margin above the respective costs of debt and bonds issued by water utilities have similar default risks, Arizona Water Company requires a risk premium that is at least 37 to 49 basis points above the benchmark costs of equity estimated for the water utilities sample.

The evidence I present in Rejoinder Table 2 shows that default risks of utility bonds must be relatively stable or the Baa rates would not provide a stronger explanation of equity costs than is provided by default free Treasury rates. Mr. Reiker makes an interesting point about default risk, but if default risk is reasonably stable Arizona Water's cost of issuing the series K bonds supports a risk premium of at least 37 to 49 basis points above benchmark costs of equity.

C. **If Arizona Water has a greater chance for default than water utilities in his sample, as Mr. Reiker suggests, Arizona Water must also have a higher equity cost.**

Q. AT PAGES 3-5, MR. REIKER RESPONDS TO YOUR TESTIMONY AT PAGES 28-29 OF YOUR REBUTTAL TESTIMONY WHERE YOU POINT OUT PROBLEMS WITH HIS ASSESSMENT THAT ARIZONA WATER IS LESS RISKY BECAUSE IT HAS LESS FINANCIAL RISK. DO YOU HAVE A RESPONSE?

A. Yes. First, he suggests Arizona Water has a greater chance for default than the utilities in his water utilities sample. The primary risk any utility faces is regulatory risk. In effect, Mr. Reiker assumes the Arizona Corporation Commission has caused such added risk. If actions taken by the ACC has caused such added risk for bonds, those actions have also caused an increase in equity costs. Mr. Reiker's statement takes him full circle back to Arizona Water having higher business risk.

Second, Mr. Reiker presents a quotation that implies the higher cost of a private placement are partly the result of Arizona Water passing along part of the cost-savings from the private issue to the institution that bought the bonds. This statement applies to utilities that have the choice of going public or making private placements, not to a small water utility. Arizona Water required many months to even find an institution that would buy the bonds. And the Company issued the series K bonds at the lowest rate it could get. I doubt Arizona Water could make a public bond issue offering. But even if it could, the high cost of issuing such a bond series would be costs that would be recovered from ratepayers. Arizona Water's ratepayers are better off with the private placement. His

comment about the spread between corporate bonds and privately placed bonds does not explain away the fact that Arizona Water was unable to issue bonds at a rate as low as A-rated or AA-rated bonds.

D. There are no data for Arizona Water to conduct the unlevered beta analysis Mr. Reiker applies to Arizona Water.

1. An unlevered beta analysis requires market data that do not exist for Arizona Water.

Q. MR. REIKER ALSO RESPONDED TO YOUR POINT ABOUT HIM USING THE WRONG MEASURE OF LEVERAGE. DID HE ADDRESS THE CRITICAL POINT YOU MADE?

A. No. Mr. Reiker agrees that Ibbotson Associates uses a market measure of leverage to calculate unlevered betas. Mr. Reiker could compute such market value equity ratios for his sample water utilities because the stocks of those utilities are publicly traded and there are prices to determine market values of equity. The critical point Mr. Reiker does not address in response to my testimony is that there is no market value for Arizona Water equity. Mr. Reiker applies a sophisticated analysis that cannot be done without the data required to make that analysis. Mr. Reiker says I ignore the "simple fact" that the sample water utilities are more leveraged than Arizona Water. The "simple fact" is that Mr. Reiker does not know if Arizona Water is more leveraged and cannot know if Arizona Water is more leveraged because he does not know the market value of Arizona Water equity. His sophisticated analysis of differences in financial risk must be ignored because Arizona Water is not publicly traded.

2. Mr. Reiker has assumed his answer by assuming Arizona Water has the same level of business risk as other water utilities.

Q. HOW DOES MR. REIKER RESPOND TO YOUR POINT THAT HE HAS ASSUMED HIS ANSWER BY ASSUMING ARIZONA WATER HAS THE SAME BUSINESS RISK AS OTHER WATER UTILITIES?

A. He provides a quotation from Reilly and Brown that does not dispute what I said. The primary risk faced by utilities is regulatory risk and that regulatory risk will vary from state to state. Thus, the *industry* referred to by Reilly and Brown would also differ by state. Mr. Reiker has no basis to assume the regulatory risks faced by the water utilities in his sample are more or less than the regulatory risks in Arizona. I have not read the full text of Reilly and Brown, but if Mr. Reiker has not taken the quotation out of context, I disagree with it. At a minimum, the size of the utility, as well as the uncertainty of income, determines the business risk of the utility.

3. Other financial models conclude there are systematic risks, such as distress and size, in addition to risk related to the market.

Q. AT PAGE 5-7, HE PRESENTS PROBLEMS WITH THE FAMA-FRENCH MODEL. DID YOU APPLY THE FAMA-FRENCH MODEL TO MAKE EQUITY COSTS?

A. No. I presented it to show one of the models others have presented that show the basic CAPM is incomplete. There are many other models, to include the ones presented by Ibbotson Associates and the Arbitrage Pricing Model that show factors other than market returns are useful in explaining returns for stocks. As early as 1985, Professor William

Sharpe, one of the original developers of the basic CAPM, discussed a multiple factor CAPM in the third edition of his book *Investments,* at pages 176-179.

Q. DOES HIS TESTIMONY AT PAGES 5-7 JUSTIFY EXCLUSIVE RELIANCE ON THE SIMPLE CAPM?

A. No. He suggests there are data availability problems with estimating equity costs with the Fama-French model. But a lack of data to implement the model does not take away from the fact that there is more than one systematic risk of concern to investors.

E. <u>The Wong article does not support denying Arizona Water its required risk premium.</u>

Q. AT PAGE 7-13, HE RESPONDS TO CONCLUSIONS YOU REACH IN YOUR SOON TO BE PUBLISHED ARTICLE. DO YOU HAVE ANY RESPONSE TO HIM?

A. Yes, I have several.

1. Pooling data does not "manufacture" data points.

Q. MR. REIKER SAYS POOLING RETURN DATA CAUSES A PROBLEM. DOES IT?

A. No. Rejoinder Table 3 shows annual beta estimates I made and annual beta estimates Staff made with and without pooling of the data. In all cases, the average of beta estimates are higher than the average of Value Line beta estimates for the three small water utilities.

Mr. Reiker says pooling data amounts to "manufacturing data points". Mr. Reiker

knows I did not manufacture data points. He has my work papers and knows exactly what I did. I assumed the three utilities had the same true, but unknown, beta, combined the data and ran one regression instead of three. Contrary to what Mr. Reiker suggests, pooling of the data would not necessarily increase statistical significance if my assumption about all of the utilities having the same beta were wrong.

2. Statistical significance levels of .05 are not generally realistic when estimating betas.

Q. AT PAGE 9, MR. REIKER SUGGESTS BETAS SHOULD BE STATISTICALLY SIGNIFICANT AT THE .05 LEVEL. IS SUCH A HIGH LEVEL OF SIGNIFICANCE COMMON WHEN BETAS ARE BEING ESTIMATED?

A. No. First, if portfolio theory is correct – that investors reduce risk by holding a portfolio of stocks instead of just one stock – estimating betas will seldom provide very high R^2s and thus low significance levels like .05. If betas could be estimated with a lot of confidence, investors would not need to diversify. Second, I know from past experience estimating betas for utilities that R^2s usually are small (and thus confidence in the beta estimates is low). With beta estimation, the goal is to make the best use of the information that is available and make the best estimate of the true, but unknown, beta. That is what I did when I pooled the data and ran the regression with an intercept dummy variable. I used my understanding of unique problems with making beta estimates that I learned at the Oregon PUC when I constructed a sample of 500,000 common stock observations to conduct research about CAPM.

3. Inclusion of dummy variables is a standard statistical technique that allows the inclusion of more information in an analysis.

Q. YOU MENTIONED YOU USED A DUMMY VARIABLE IN YOUR ANALYSIS. MR. REIKER CRITICIZES YOU FOR DOING THAT. PLEASE EXPLAIN.

A. I knew in advance of conducting my analysis that the price of SJW Corp common stock increased by a large amount when investors expected it to be purchased by American Water Works. In terms of CAPM, part of the change in price was an unsystematic return. Including the dummy variable allows this additional information to be recognized. Mr. Reiker says that when the dummy variable is not included in the regression, the significance level dropped. It should drop or there is no reason to include it in the analysis. What he did not say was that the regression estimate of beta stayed about the same. This is exactly what one would expect if the unusual return for SJW Corp was "unsystematic". Including the dummy variable, however, is efficient because it takes known information into account. Mr. Reiker is wrong to suggest such information should be ignored.

4. Roll provides the basis for a one-tailed test.

Q. BASED ON AN ARTICLE PUBLISHED BY LEVHARI AND LEVY, MR. REIKER CRITICIZES YOUR USE OF A ONE-TAILED t-TEST. WHAT IS THE BASIS FOR YOUR CHOICE OF A ONE-TAILED TEST?

A. I relied upon a paper Professor Richard Roll of the University of California at Los Angeles wrote three years after the Levhari and Levy paper was published. Roll presents a theoretical basis for assuming that the beta is expected to be higher if annual instead of

monthly or weekly data are used to make the estimates. Mr. Reiker is wrong.

5. Mr. Reiker's four criticisms of my annual beta estimates are trivial and, if recognized, would not change the beta estimates in any significant way.

Q. PLEASE RESPOND TO MR. REIKER'S FOUR CRITICISMS OF YOUR ANNUAL BETA ESTIMATES AT PAGE 10.

A. Certainly. First, he criticizes the index I used to make the beta estimate. I agree that slight differences in beta estimates will occur if different indexes are used to make beta estimates. From my experience estimating betas, the differences in beta estimates resulting from using different indexes are small. Ms. Wong makes the same observation in her article. Rejoinder Table 3 shows beta estimates ACC Staff and I made with different indexes. As I understand Staff's estimates, the index they have used is similar to the one used by *Value Line*. There are differences in the beta estimates, but – as expected -- they are not large and certainly do not explain a difference in betas as large as .31 (.78 estimated with annual data versus .47 with weekly data). Mr. Reiker knew this first argument is trivial because he also had the beta estimates I report in Rejoinder Table 3.

Second, he criticizes me for using total returns while *Value Line* uses changes in prices. The Staff estimates I report in Rejoinder table 3 are based on changes in prices. Again, Mr. Reiker is trying to make a mountain out of a molehill. If anything, his argument goes against him. Based on Staff's estimates of betas made with annual changes in prices, the difference between average betas computed with either pooled data or as an average of the three beta estimates would be larger (.83 minus .47 or .87 minus .47) than I estimated with pooled annual total returns data.

Third, he says a comparison cannot be made because I use pooled data to make my estimates. Rejoinder Table 3 shows that if I had made individual estimates of betas and then took an average, instead of computing the betas with pooled data, the average beta estimate would be larger and the difference between the average beta based on annual data and on weekly data would increase, not be smaller.

Fourth, he complains about me including a dummy variable to estimate the betas. I went back to the data I used to make the beta estimate for my article and ran the pooled regression without the dummy variable. The beta estimate increased from .78 to .83 -- not much of a change. But I relied on the .78 beta because it incorporates more information.

6. Staff's beta analysis make Mr. Reiker's testimony unnecessarily technical and complicated. His beta estimates are not much different than mine.

Q. AT PAGES 10 TO 11, MR. REIKER DESCRIBES STAFF'S BETA ANALYSIS. DO YOU HAVE ANY COMMENTS ABOUT THAT TESTIMONY?

A. Yes, I have two comments. First, his focus is statistical significance when it should be on obtaining the best estimate of beta. Second, the Staff estimates of the beta for SJW Corp changed significantly when the dummy variable was not included in the regression. Little change occurred with the data I used: The adjusted beta estimate for SJW Corp was 1.12 without the dummy variable and was .97 with the dummy variable. Possibly Staff made a mistake with the data they used to make their estimates. Given time constraints, I have been unable to explain why Staff did not find the small difference that I found with the data I used.

Q. DID THE ANALYSIS MR. REIKER PROVIDES SUPPORT HIS CONCLUSION THAT "MEANINGFUL BETA ESTIMATES" CANNOT BE MADE WITH FIVE YEARS OF DATA?

A. No. I agree that individual beta estimates for the three small water utilities that were made with five years of data have small R^2s, but individual estimates of utility betas made with 60 monthly returns also have small R^2s. Possibly Mr. Reiker has not spent much time estimating betas and thus he expected unrealistically high levels of significance, when that is not expected. The beta estimates I made with pooled annual data are actually more significant than I expected, based on my past experience making such estimates for other utilities.

7. Wong's written "findings" are not supported by data in her tables. Her tables actually support equity costs for small utilities being higher than for larger utilities.

Q. AT PAGE 12, MR. REIKER DISCUSSES THE WONG FINDINGS. DO YOU HAVE A RESPONSE TO WHAT HE SAID?

A. Yes. He says my article does nothing to contradict the results in the Wong study. I disagree. In my article, I pointed out that in one of two periods, Wong reported in her Table 2 that beta risk for utilities increased as size decreased. I recently observed (after finishing the article) that evidence in Ms. Wong's article also supports a small firm effect for the other period. In the second period, when Wong did not find betas increasing as firm size decreased, evidence in her Table 3 showed that there was a statistically significant (at the 10% level) small firm effect. That result is consistent with those who have speculated that the small firm effect is in fact the result of poor betas estimates.

Ibbotson Associates find that when they estimate betas with annual data that beta estimates increase, and though the small firm effect does not go away, it is smaller than when betas are estimated with monthly data.

I do not disagree with Wong's quantitative estimates. What I disagree with is her interpretation of those statistical results. Wong ignored the results in her Table 2 and ignored the inference I have drawn by combining her results in Table 2 and Table 3 when she wrote the conclusion that Mr. Reiker quoted at page 60 of his direct testimony. I do not dispute her empirical findings but I certainly dispute the conclusions she draws from her statistical findings. I also did not dispute her finding about beta risk made with short data intervals but explained those estimates are expected to be biased downward based on the theoretical analysis of Professor Roll.

Q. DO YOU HAVE ANY OBSERVATIONS ABOUT HIS COMMENT ABOUT DIFFERENTIAL INFORMATION AT PAGE 12?

A. Yes. It is puzzling and inconsistent with his other testimony. Mr. Reiker apparently believes markets are efficient or at least reasonably efficient. The term "efficiency" in this case means investors quickly re-price common stocks to take into account new information when it becomes available. At page 12, line 23, Mr. Reiker agrees with me that more information will tend to be generated for larger utilities than for smaller utilities. But then he suggests markets are not efficient and that investors will not know about the larger amount of information being generated for the larger utilities. Mr. Reiker can't have it both ways. If markets are efficient, there will be more information known about larger utilities than smaller ones, providing a conceptual reason for a small firm effect in the utility industry.

8. Staff's criticisms of my paired difference test are wrong because the paired observations are dependent.

Q. AT PAGE 13, MR. REIKER COMMENTS ABOUT YOUR DISCUSSION OF THE PAIRED DIFFERENCE TEST. DO YOU HAVE A RESPONSE?

A. Yes. His comments on the appropriateness of the paired difference test are wrong because the paired observations are dependent. The crux of issue of whether a paired difference test is more appropriate than Mr. Reiker's confidence interval test is whether the two sets of equity cost estimates for small and large utilities are independent or not. Mr. Reiker states at page 14, lines 2-4, "Dr. Zepp cannot claim that the large water utilities and the small water utilities in the Zepp study are not independent samples." It is obvious from even casual examination of Exhibit TMZ-R4, Page 4 of 5, that the two samples of equity costs for small and large water utilities are highly correlated and dependant. This is not surprising since estimated returns for small and large water utilities are both related to expected market returns and interest rates, both of which vary over time and in turn cause expected water utility returns for both small and large utilities to vary correspondingly. That is exactly what finance theory predicts. Mr. Reiker agrees with this obvious point when he says "the cost of equity moves in the same direction as interest rates" (page 26, line 10 of Mr. Reiker's Surrebuttal). That is why it is essential to pair observations over time as I did. If observations are not paired then it is equally likely to observe a large water utility equity cost estimate from 1987, the year of highest estimated equity costs for both small and large utilities, with a small water utility equity cost estimate for 1997, the year of lowest estimated equity costs for both samples.

It is clear if you assume independence, as Mr. Reiker does, that variation from year

to year for both small and large water utilities due to variation in interest rates will overwhelm variation between small and large utilities. In fact, the difference between the smallest and largest estimated equity costs for large companies is 5.84% and for small utilities is 6.34%. The largest difference between small and large equity cost estimates is 1.94%. Mr. Reiker's test relies on this year-to-year variation and the correlation between estimated returns for small and large utilities to overwhelm the small differences in return to reject a premium for small utilities. That is shoddy statistical analysis.

Q. DO YOU HAVE ANY ADDITIONAL EVIDENCE THAT YOUR TWO SAMPLES ARE NOT INDEPENDENT?

A. Yes. If Mr. Reiker's clouded vision in examining my data does not allow him to observe the obvious correlation and dependence in the samples, I calculated the correlation coefficient between the two samples. The correlation coefficient is .93 and it is significant at greater than 99% confidence.

Q. DO YOU HAVE ANY OTHER COMMENTS ABOUT MR. REIKER'S DISCUSSION OF YOUR PAIRED DIFFERENCE ANALYSIS?

A. Yes. At page 15, lines 18-19, Mr. Reiker states "A paired difference test is only appropriate when we have a paired sample; that is, a sample where we have pairs of values." I agree completely. That is why I used a paired difference test. The observations are estimated equity costs paired by year. Failure to pair returns by year ignores the dependence of estimated equity costs on interest rates which vary significantly year-by-year. Mr. Reiker ignores the dependence of equity costs on interest rates in responding to my analysis, a dependence he admits by stating the cost of equity depends

on the level of interest rates at page 26 of his surrebuttal testimony.

9. A .05 level of significance is not appropriate when estimating betas.

Q. AT PAGE 16, MR. REIKER QUOTES FROM "HOW TO LIE WITH STATISTICS". DOES THE QUOTE APPLY TO THE TESTIMONY AND ANALYSES YOU MADE?

A. No. I agree with Darrell Huff that "for most purposes nothing poorer than a .05 percent level of significance is good enough". But estimating costs of equity and betas is not "most purposes". My study shows that in 10 out of 11 years small water utilities had estimates of equity costs that are higher than the equity cost estimates for larger water utilities being regulated by the same regulatory commission. Mr. Reiker apparently won't be satisfied unless the analysis shows 11 out of 11 years. Also, I reported that the difference in the costs of equity for the larger and smaller utilities was significant at the 10% level. Those who reviewed my paper at *The Quarterly Review of Economics and Finance* were satisfied with a significance level of 10%. The Wong article can no longer be used to justify denying small water utilities a risk premium they require.

F. <u>Data problems and the Wong paper support a higher equity cost for Arizona Water.</u>

Q. DO YOU HAVE ANY COMMENTS ABOUT HIS TESTIMONY REGARDING STATISTICAL TESTS AT PAGE 17?

A. Yes. First, he references the Wong study. I have pointed out that, if any weight is given to the Wong paper, her study supports small utility stocks being more risky than larger

ones. Wong's Table 2 reports beta risk for utilities in two periods. In one of those periods, her analysis shows that the smaller utilities have higher estimated betas. In the other period, her Table 3, shows there is a statistically significant (at the 10% level) small firm effect. Evidence in the Wong paper supports the use of the one-tailed test, not the two-tailed test.

Second, he points out data problems may explain the small firm effect. What he fails to note, however, is that "data problems" have long been known to lead to a downward bias in beta estimates. Data problems result when small utility stocks are thinly-traded, leading to negatively biased beta estimates. The bottom line is that if the small firm effect is not there, the beta estimate for the small firms will be bigger. Either way, small utilities like Arizona Water require higher equity returns than the larger water utilities in Mr. Reiker's sample.

G. Staff's CAPM approach does not correct for all of the negative bias in utility equity cost estimates.

Q. AT PAGES 18-20, HE RESPONDS TO YOUR COMMENTS ABOUT CAPM. AT PAGE 19 HE SAYS THE CAPM TESTS YOU CITE CANNOT BE COMPARED TO THE STAFF METHOD. DO YOU AGREE?

A. No. Mr. Reiker contends that the tests I cite cannot be compared to the Staff approach because Staff uses intermediate-term Treasury rates (not T-bills) and adjusted betas (not raw betas). He is wrong. First, it is easy to show – as I explained in my rebuttal testimony at page 49 – that moving to intermediate-term Treasury rates eliminates only a small part of the bias. On average, intermediate-term Treasury rates have yields that are

only 100 basis points above T-bill rates but, based on the results of the Fama-MacBeth study, the zero-beta asset requires, on average, a return that is 476 basis points higher than the average intermediate-term Treasury rate. Also, with respect to long-term versus intermediate term Treasury rates, if indeed a "liquidity risk premium" is a problem, it is just as a much a problem with intermediate-term Treasury rates as with long-term Treasury rates.

The second point he raises is more difficult to address because it is technical. The Fama-MacBeth and the Black, Jensen Scholes ("BJS") studies were based on portfolios of estimated betas being used to forecast subsequent returns for portfolios – not raw betas for individual stocks – and did not adjust the portfolio betas. Mr. Reiker is correct that using adjusted *Value Line* betas will produce higher equity costs than raw unadjusted betas. The issue, however, is whether the *Value Line* adjustment is sufficient to eliminates the bias in the Sharpe-Lintner version of CAPM. Black revisited the BJS estimates in 1993 and used the same methods used by BJS in their original study. (I discuss Black's paper at page 47 of my rebuttal testimony). Black certainly knew about the method *Value Line* and others used to adjust betas because Marshall Blume ("Betas and their Regression Tendencies," *Journal of Finance,* Vol. XXX, No. 3, June 1975) had published his paper showing such adjustments improved beta forecasts years before Black published the update of BJS. Based on that time-line, I disagree with Mr. Reiker's assumption that using betas adjusted toward the market eliminates the bias. Black tells us "I am especially proud of the 'portfolio method' we [BJS] used. Nothing I have seen since 1972 leads me to believe that we can gain much by varying the method of analysis (Fischer Black,

"Return and Beta," *The Journal of Portfolio Management*, Vo. 20, No. 1 (Fall 1993), page 11). Black chose not to adjust raw betas in his tests, but instead used the portfolio approach instead of adjusted betas. And, Black still found the risk-return line to be flatter than the Sharpe-Lintner version of CAPM and thus consistent with the zero-beta CAPM.

H. Responses to Mr. Reiker's comments about DCF estimates.

1. DPS growth provides the worst measure of growth for the constant-growth DCF model and such growth estimates should be excluded from constant growth estimates.

Q. AT PAGE 20 MR. REIKER RESPONDS TO YOUR COMMENTS ABOUT INCLUDING DIVIDENDS PER SHARE GROWTH TO MAKE DCF EQUITY COST ESTIMATES. DO YOU HAVE A RESPONSE?

A. Yes. Mr. Reiker correctly summarizes my testimony by acknowledging I said past DPS growth and near-term forecasts of PDS growth are the worst indicators of future growth to use in the constant growth DCF model. I explain in my rebuttal testimony (pages 53-55) why that is the case and why such measure of growth do not belong in estimates of growth for the constant growth DCF model. I agree with Mr. Reiker that forecasts of DPS growth should be included in a multi-stage DCF model for the first few years of such an analysis (see Zepp rebuttal at pages 57-60), but strongly disagree that such past and near-term forecasts of DPS growth belong in the constant growth model for the reasons stated at pages 53-55 of my rebuttal testimony.

2. It is appropriate to include a second-stage of growth in a multi-stage growth DCF model that reflects reasonable expectations of subsequent growth by investors.

Q. AT PAGES 23-24, MR. REIKER STATES YOUR MODIFICATIONS TO HIS MULTI-STAGE DCF MODEL ARE NOT APPROPRIATE. DO YOU HAVE A RESPONSE?

A. Yes, at page 23 he states I injected a "supernormal" growth stage between the first and second stages of growth in his model. And at page 24, he contends that recognizing *Value Line's* projections of BR growth to determine investors' expectation of growth in the new second stage is inappropriate. At page 22, Mr. Reiker acknowledges Professor Myron Gordon as an authority on growth rates to use in the DCF model. In February 1999, several months after the speech Mr. Reiker quotes at page 22, Professor Gordon was asked by NW Natural Gas, an Oregon natural gas utility, and the Oregon PUC to make a presentation on methods to determine equity costs. As part of his preparation for the conference, Dr. Gordon reviewed the methods I had used to prepare equity cost estimates. The parties hoped his presentation would subsequently help the parties reach a settlement on an appropriate return on equity. (Unfortunately, a settlement could not be reached, and the case went to hearing.)

Rejoinder Table 4 is Exhibit 5007 in Oregon PUC Docket 132. It is an electronic mail from Dr. Gordon to Susan Ackerman, an employee of NW Natural Gas. In it, Dr. Gordon refers to a "Z" factor I had used to determine second stage growth that reflected potential future increases in DPS growth when DPS was expected to grow more slowly than EPS in the first stage. Dr. Gordon agreed with my approach. Contrary to what Mr. Reiker says at page 24, Professor Gordon said:

> In short, there is good reason to believe that a higher rate of growth in earnings than in dividends in the near future will lead to a higher growth

rate in dividends subsequently.

That was the situation in the NW Natural case and that is the situation today in this case. Contrary to Mr. Reiker's criticism of me inserting a second stage of growth, it is an insertion that is consistent with Dr. Gordon's analysis of a similar situation in another case. And also contrary to Mr. Reiker's statement, it is reasonable to assume "a higher growth rate in dividends subsequently". In my view, it is certainly reasonable for investors to expect dividend growth in the "subsequent" period (the second period) to reflect sustainable growth estimated with the *Value Line* data for 2006-2008. My revision of Mr. Reiker's multi-stage model is totally consistent with Dr. Gordon's comments in Rejoinder Table 4.

I. Equity costs have increased since Mr. Reiker and Mr. Rigsby prepared their cost of equity estimates but they have left their recommended ROEs unchanged.

Q. DO YOU HAVE ANY CONCLUDING REMARKS?

A. Yes. I updated my equity cost estimates when I prepared rebuttal testimony.

Interest rates have increased substantially since Mr. Reiker and Mr. Rigsby prepared their direct testimonies, but neither witness has proposed an increase in his recommended ROE. I do not update Mr. Rigsby's 91-day rates because they are not relevant to the period in which new rates will be set. His 91-day rate ends in 2003 and reflects a cost of money that exists many months before it is realistic for new tariffs to be approved. Rejoinder Table 5 shows Mr. Reiker's average of Treasury note rates has increased by 70 basis points since the time he prepared testimony. Rejoinder Table 3 also shows current rates are now within 55 basis points of the average intermediate-term Treasury rates forecasted by Blue Chip in June of 2003.

I have two observations. One is that the cost of equity is higher now than when Mr. Reiker and Mr. Rigsby prepared their respective testimonies. The other point is the difference between actual and forecasted interest rates is less than the difference in rates found by updating the interest rates Mr. Reiker relies upon in his analysis.

I explained why the relevant interest rates to use in this case are forecasted rates that start no sooner than 2004. This is because new tariffs will be authorized no sooner than early 2004 and Mr. Reiker's own analysis shows Blue Chip forecasts that I rely upon are not biased. But in addition to the forecasted rates being the conceptually correct rates to consider, the current Treasury rates are much closer to the forecasts made by Blue Chip, than they are to interest rates Mr. Reiker relied upon when he prepared his direct testimony.

Q. DOES THIS COMPLETE YOUR PREFILED REJOINDER TESTIMONY?

A. Yes.

EXHIBITS

Arizona Water Company

Rejoinder Table 1
Differences in Current, Past and Forecasts Premiums
of Baa Rates over 10 Year Treasury Rates

Past Periods[a/]	Average Baa Rate	Average 10 Year Treasury Rate	Average Premium	Difference Between Premium in Curent period and in 1982-1998 Period
1982-1998	10.33	8.33	2.00	
1999-2002	8.00	5.32	2.67	0.67
2001-2002	7.87	4.81	3.06	1.06
Forecasts[b/]				
2004	7.1	4.6	2.50	0.50
2005	7.7	5.3	2.40	0.40

Sources:
a/ Federal Reserve
b/ Blue Chip consensus forecasts, June 2003.

Arizona Water Company

Rejoinder Table 2

Regression Results[a/] and the Ability of Baa Rates
and 10 Year Treasury Rates to Explain Equity Costs

Period	Regression Results Intercept	Slope	Number of Observations	R^2
Baa rates explaining equity costs				
1999 to 2002	0.062	0.614 (0.2258)[b/]	35	18.3%
1982 to 2002	0.074	0.492 (0.0098)[b/]	464	84.5%
10yr Treasury Rates explaining equity costs				
1999 to 2002	0.096	0.279 (0.1552)[b/]	35	8.9%
1982 to 2002	0.080	0.553 (0.0121)[b/]	464	82.0%

Sources and Notes:

a/ Equity cost data is updated data for sample adopted in Table 23. Interest rates reported by the Federal Reserve.

b/ Standard error of slope coefficients in parentheses. All slope estimates statistically different from zero at .05 level.

Arizona Water Company

Rejoinder Table 3

Adjusted Beta Estimates Made by Dr. Zepp and ACC Staff

	Dr. Zepp's Estimates	Mr. Reiker's Estimates
Connecticut Water Service	0.74	0.60
Middlesex Water	0.64	0.61
SJW Corp	1.12	1.39
Average	0.83	0.87
Pooled beta estimates	0.78	0.83

Sources:
Dr. Zepp's and Mr. Reiker's workpapers.

Ackerman, Susan

·om: Mike Gordon [gordon@mgmt.utoronto.ca]
ent: Monday, July 26, 1999 12:06 PM
To: Ackerman, Susan
Subject: "Z" factor comments

Exhibit TMZ-RJ4
Page 1 of 1

To Whom It May Concern,

This is in response to a request by NW Natural that I comment on the use of a "Z" factor in the testimony of Dr. Zepp and the comments on the subject by Mr. Thornton.

In his March 1999 direct testimony, Dr. Zepp arrived at an estimated average long run growth rate in the dividend to start four years in the future as the sum of the retention growth rate and a "Z" factor intended to capture the long run growth in the dividend due to the higher rate of growth in earnings than in the dividend.

Mr. Thornton rejected the Z factor on the grounds that he had never "seen or heard of it before" and no such factor is derived by me in my book.

My book, _The Cost of Capital to a Public Utility_, stated that "Under our model of security valuation, dividend, earnings and price per hare, all are expected to grow at the same rate."(p.88) I then go on to uggest various reasons why investors might and might not use the rate of growth in earnings as the forecast growth rate. Specifically, on page 90, I discuss the case of

> a firm that experiences a rise in its rate of return on assets and investment. For a variety of reasons, some related to this event , the firm may raise its investment rate and secure additional funds from retention. Specifically, the firm decides not to raise its dividend for a number of periods. The firm's rate of return and retention rate have gone up, and its expected future growth is higher, but the rate of growth in the dividend is zero over this period.

This is an extreme version of what may be taking place at NW Natural and other gas LDCs.

In short, there is good reason to believe that a higher rate of growth in earnings than in dividends in the near future will lead to a higher growth rate in the dividend subsequently.

The above principle can be implemented in a variety of ways and I am in no position to comment on whether Dr. Zepp used the best possible method and whether or not the numbers he used are correct. However, I do not believe that what Dr. Zepp did is wrong in principle.

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Arizona Water Company

Rejoinder Table 5

An Update of Treasury Note Rates
Relied Upon By Mr. Reiker and Forecasted by Blue Chip

Actual Rates	7-May-03	4-Sep-03	Difference
5-Year Treasury	2.74%	3.48%	
7-Year Treasury	3.38%	4.02%	
10-Year Treasury	3.80%	4.51%	
Average	3.31%	4.00%	0.70%

Forecasts	Blue Chip Forecast for 2004-2005	4-Sep-03	Difference
5-Year Treasury	4.15%	3.48%	
7-Year Treasury	na	4.02%	
10-Year Treasury	4.95%	4.51%	
Average	4.55%	4.00%	-0.55%